

REMARKS

Claims 1, 3, 4, 6-16, 18-20 and 22-31 were examined in the Office Action mailed September 15, 2006.

In order to advance the claims to allowance, the Applicants have amended independent claim 16 to clarify the calculations performed in the recited vehicle mass determination method, and to incorporate the limitations of its dependent claim 18. Conforming amendments have been made to claims 19, 23 and 30, and claims 18 and 22 have been canceled without prejudice to the subject matter therein. The Applicants further have canceled claims 1, 3-4 and 6-15, without prejudice.

As amended, claim 16 recites a method for determining the mass of a motor vehicle, in which:

- a vehicle mass is obtained by dividing: (i) a vehicle acceleration determined “from at least a time differential of vehicle speed, a slope descending angle and a rolling resistance coefficient” into (ii) vehicle forces obtained from “a driving force of a vehicle drive unit, resistance forces resulting from rotational forces and air resistance, and a braking force,”
- a plurality of vehicle mass values is obtained from a plurality of driving situations,
- each of the plurality of vehicle mass values is stored, and
- a collective mass value is determined from the stored plurality of vehicle mass values, and the plurality of vehicle mass values obtained in the different driving situations are weighted differently.

The Applicants note that as amended, independent claim 16 closely tracks the steps recited illustrated in Fig. 1 and the mass determination formula recited in Specification ¶ [0015] (former ¶ [0014], changed to [0015] in second substitute

specification): “ $m \cdot 130 = (F_{motor} - F_{rot} - F_{air \ resistance} - F_{brake}) \cdot 110 / (dv/dt + g \cdot \sin(\beta) + g \cdot c_{roll}) \cdot 120$.”

The pending rejections are as follows:

- Claims 1, 3-4, 6-16, 18-20 and 22-31 stand rejected under 35 U.S.C. § 112, first paragraph, as not enabled for determining vehicle acceleration resulting from various resistance forces.
- Claims 1, 3-4, 6, 8, 12, 16, 18-19, 22, 24, 28 and 30 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,314,383 B1 to Leimbach, *et al.* (“Leimbach”) in view of U.S. Patent No. 6,332,354 B1 to Lalor, *et al.* (“Lalor”) and U.S. Patent Publication No. US 2003/0040861 A1 (“Bellinger”).
- Claim 20 stands rejected under § 103(a) as unpatentable over Leimbach, Lalor and Bellinger, in further view of U.S. Patent No. 6,438,510 B2 to Zhu, *et al.* (“Zhu”).
- Claims 7 and 23 stand rejected under § 103(a) as unpatentable over Leimbach, Lalor and Bellinger, in further view of U.S. Patent No. 6,374,171 B2 to Weiberle, *et al.* (“Weiberle”).
- Claims 9 and 25 stand rejected under § 103(a) as unpatentable over Leimbach, Lalor and Bellinger, in further view of U.S. Patent No. 6,059,379 B1 to Demi, *et al.* (“Demi”).
- Claims 10 and 26 stand rejected under § 103(a) as unpatentable over Leimbach, Lalor and Bellinger, in further view of U.S. Patent Publication No. US 2002/0008423 A1 to Yasui, *et al.* (“Yasui”).
- Claims 11 and 27 stand rejected under § 103(a) as unpatentable over Leimbach, Lalor, Bellinger and Demi, in further view of Yasui.
- Claims 13 and 28 stand rejected under § 103(a) as unpatentable over Leimbach, Lalor and Bellinger, in further view of U.S. Patent No. 5,485,381 A to Heintz, *et al.* (“Heintz”).

1. The § 112 Rejection Has Been Addressed. In cancelling claim 1 and amending claim 16 to clarify the terms included in the vehicle acceleration determination, the Applicants have made the claims consistent with the fully-

enabled Specification disclosure. Reconsideration and withdrawal of the pending § 112 rejection is respectfully requested.

2. The Amended Claims Are Patentable Over the References. The Applicants respectfully traverse the pending rejections under § 103(a), on the ground that the references fail to teach or suggest all the features of the present invention recited in independent claim 16 and its dependent claims.

The Lalor reference is cited as teaching a system and method for determining the effectiveness of a braking system and for measuring changes in the mass of a motor vehicle, and it is asserted that it would have been obvious to modify the Leimbach system to “include the teachings of braking force” of Lalor.

September 15, 2006 Office Action at 6-7.

In fact, Lalor does not contain any teachings or suggestions regarding consideration of braking forces in the determination of a vehicle’s mass. Rather, in all cases in the Lalor system and method, a vehicle mass must be *input* into the system before the system can perform its object (evaluating braking effectiveness). In each instance of Lalor’s descriptions of its embodiments, as well as in its Summary of the Invention section,, Lalor notes that the vehicle mass value must be input into the system, either manually by the vehicle operator, or automatically via RF transmission by an automated weigh scale.

See, e.g., Lalor at 2:40-46 (“allows the operator to input load information manually, or automatically through ... means connected to an automated weigh scale”); 4:25-26 and 4:42-43 (system embodiments including “means for inputting the mass of the vehicle to the computer”); 5:1-2 (method embodiment including

the act of “providing the mass of the vehicle”); 7:36-37 (“Actual vehicle mass is input to the computer 110 manually by the operator or automatically from automated road scales.”); Figs. 1, 8 (initial steps 202, 402 include input of actual vehicle mass).

In the pending Office Action, the passage at Lalor 9:1-15 is cited as supporting the assertion that Lalor teaches determining braking effectiveness and measuring changes in the mass of the vehicle. This is not correct.

The cited passage, which begins in the previous column at 8:60, teaches *only* that in order for the Lalor system to be able to compare actual vehicle deceleration with “known” decelerations at different vehicle masses (in order to make its assessment of braking efficiency), the Lalor system must be provided with a table of *predetermined test data* as one of its inputs, where the table is compiled from empirical tests “in which the brake effectiveness is known to be 100%.” Lalor at 8:60-67. The cited passage then proceeds to describe how this empirical test data is obtained, involving multiple tests at different vehicle masses, brake pressures, etc., to build a table for computer 110 to reference when comparing actual braking deceleration to these “ideal” braking deceleration values (*i.e.*, taking the operator-inputted vehicle mass, looking up a corresponding ideal braking deceleration, and comparing the actual braking deceleration to the ideal value to determine braking efficiency). *Id.* at 9:1-15. Thus, there is no teaching or suggestion or any “measuring changes in the mass

of a motor vehicle" in the cited portion of Lalor.¹

As a separate ground for allowance of the amended claims over the cited references, there is no suggestion of the present invention's "determining a collective mass value from the stored plurality of vehicle mass values, wherein the plurality of vehicle mass values obtained from the plurality of driving situations are weighted differently."

The Bellinger reference is cited as teaching a system and method for estimating vehicle mass which includes storage of individual mass evaluation results and combining these results into a collective mass value, and Leimbach is cited as teaching weighing different driving situations differently. September 15, 2006 Office Action at 5. The Applicants respectfully submit that neither of these references suggests – or even hints at – the present invention's assigning mass values obtained in different driving situations different weights. For its part, Bellinger is completely silent on weighting, and Leimbach teaches no weighting at all – rather than considering the relative significance of mass values in different situations, Leimbach teaches that any mass values that may have been obtained in other than a narrow range of "valid" conditions (essentially, straight. level vehicle operation) *are to be summarily discarded.* Thus, Leimbach teach discarding of potentially invalid data, without providing

¹ Lalor is otherwise silent on the subject of mass determination. The only other indirect mention of "mass" is a reference to assessing whether the vehicle may be "overloaded" – yet even here "mass" measurement is not involved. Instead, the passage at 8:5-19 discusses comparison of various braking performance (deceleration) rates, including comparison with the predetermined, table-stored braking performance data. The Lalor system determines that the vehicle may be "overloaded" solely by assessing whether the actual braking performance is not as good as the expected performance.

any suggestion of the alternative an discarding the data, such as the present invention's assigning different weights to mass values from different situations. Bellinger and Leimbach therefore do not teach or suggest this feature of the present invention for which they were cited.

Because no combination of Leimbach, Lalor and Bellinger teaches or suggests all of the features of the present invention recited in independent claim 16, and these references' deficiencies are not cured by the remaining references, claim 16 and its dependent claims are patentable over the cited references under § 103(a). Reconsideration and withdrawal of the pending § 103(a) rejections is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, the Applicants respectfully submit that upon claims 16, 19-20 and 23-31 are in condition for allowance. Early and favorable consideration, and issuance of a Notice of Allowance for these claims is respectfully requested.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

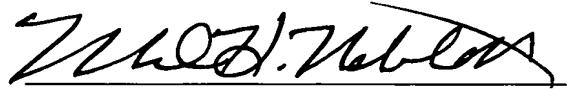
If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit

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Respectfully submitted,

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